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EXAMINER	
DICKERSON, CHAD S	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/622,462	HASHIMOTO ET AL.	
	Examiner	Art Unit	
	CHAD DICKERSON	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 October 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/26/2009 has been entered.

Response to Arguments

2. Applicant's arguments filed 2/2/2009 have been fully considered but they are not persuasive. The same references of Moro '605, So '419, Mishima '031 and Chiarabini '228 are still being applied. The Applicant stated in the remarks that the cited references do not disclose a system that treats two types of data in a different way. The Examiner respectfully disagrees with this assertion.

To address the arguments posed in the response, the Examiner inadvertently omitted the phrase "or sequentially" next to the word "simultaneous" in the previous response. The Examiner meant to clearly convey that the claims rejected in the previous Office Action failed to explicitly describe that the processing of a small amount of information is different from the large amount of information. In regards to the current claim language, the Examiner suggests that the claim language explicitly state that the information is processed in a sequential, not in a simultaneous manner, through the

compression/expansion device before being sent to the output portion. The broad nature of the claims can still have prior art applied that performs both small and large amount of information processing being processed in simultaneous manners through an output portion and through compression/decompression units, as performed in the Chiarabini reference.

Lastly, regarding the Shiohara reference, the Examiner believes that one of ordinary skill in the art would have combined the Shiohara reference with the other references in order to specifically provide a binary data table of binarized color information from a half-tone module to an output portion of an output device. This information is used to ensure that the data is printed with high accuracy when referring to the binary data table[1]. Therefore, with the color correction and binary image functions of the half-tone module occurring to data input into the output portion of a printing device, the Shiohara reference combined with the previously combined references discloses the claim limitations.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrases "small and large amount of

[1] See Shiohara '935 at ¶ [0005]-[0011] and [0090]-[0093].

information" render the independent claims indefinite. How does the system know that color data is a large amount of data versus black and white data being a small amount of data? A page with a sentence in color can be considered as a small amount of data compared to a ten page document with black and white text and graphics covering each and every sheet of paper. Claims 2-7, 9-14 and 16-21 are rejected based on their dependency.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-5, 7-12, 14-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moro (US Pub No 2004/0095605) in view of So '419 (USP 6628419), Mishima '031 (USP 6381031) and Chiarabini '228 (USP 7324228).

Re claim 1: Moro discloses a data processing apparatus, comprising:

an input portion (2) (i.e. the scanner (2) can be considered as an input portion since this inputs scanned information into the system; see fig. 4; paragraph [0021]);

an output portion (3) (i.e. the printer (3) can be considered as the output portion since it outputs information out of the system; see fig. 3; paragraph [0021]);

a plurality of compressing/expanding devices (452 and 451) that compress input data-to-be-output that is inputted from said input portion and expand compressed data-

to-be-output (i.e. in fig. 6, a plurality of compression/decompression devices are illustrated. These devices compress the inputted information and decompress the information to be outputted from the system. The input originates from the scanning section (3) and is eventually output to the printing section (3). Expansion is analogous to decompression in this invention; see figs. 5 and 6; paragraphs [0026] and [0035]-[0038]);

a file memory (46) which stores said data-to-be-output, the data-to-be output being compressed by some or all of said plurality of compressing/expanding devices (i.e. the page memory (46) temporarily stores the compressed data before it is to be decompressed before output; see fig. 6; paragraph [0036]);

a data discrimination portion which discriminates whether said input data-to-be-output is data including a small amount of information or a large amount of information (i.e. the CPU (40) determines or discriminates whether inputted information is a small amount or a large amount by measuring the amount of the data using a scale of frequency. Shown in figures 7-9 are different frequency readings of color and monochrome data. The highest frequency of the color data is at least five times larger than the highest frequency of the monochrome data, which represents small information. With using this scale of frequency when increasing the density in the X-axis direction, it is seen how the color is different from the monochrome by looking at the frequency versus the increasing density on the scale. With the CPU (40) looking at these scales, it determines or discriminates a large amount of information, which is associated with the color data when judging the frequency of an image inputted into the

system, and it also discriminates a small amount of information, which is associated with the monochrome data. The monochrome data is considered small in comparison to the color data when comparing how their measured frequencies of their respective density data; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]); and

a transfer controller (40);

wherein, in cases where it is discriminated by said data discrimination portion that said input data-to-be-output is data including a small amount of information (i.e. data can be discriminated or determined to be small, or monochrome, based on the determination by the CPU (40); see paragraphs [0035], 0036] and [0042]-[0044]), said transfer controller transfers said input data-to-be-output to said output portion through said plurality of compressing/expanding devices (i.e. when the data is determined to be small information, or monochrome, it is transferred to the variable-length compression/decompression processing section. This section is able to perform both compression and storage in the page memory (46). Then, the monochrome, or small amount of information, is decompressed before being sent to the printer section (3); see paragraphs [0035], 0036] and [0042]-[0044]), and

wherein, in cases where it is discriminated by said data discrimination portion that said input data-to-be-output is data including a large amount of information (i.e. data can be discriminated or determined to be large, or color, based on the determination by the CPU (40); see paragraphs [0035], 0036] and [0042]-[0044]), said transfer controller transfers said input data-to-be-output to said plurality of compressing/expanding devices while transferring said input data-to-be-output to said

output portion (i.e. when performing compression on the color data, the color data is sent through all of the compression/decompression sections since the data goes through both the fixed and variable length compression/decompression devices. When performing the process on a multiple amount of originals scanned in to the system, the first original is printed while the other originals have the process of compression and storage being performed on the respective documents. Therefore, the feature of having the data that will be outputted being sent to the compression and expansion devices while transferring other data to be outputted to the printer portion is performed by this device. With the data being sent through all of the compression/decompression sections, this includes at least some of the compression/decompression sections in the device; see fig. 6; paragraphs [0035], [0036], [0042]-[0044] and [0057]).

However, Moro fails to teach operating in parallel.

However, this is well known in the art as evidenced by So '419. So '419 discloses operating in parallel (i.e. the invention of So '419 is similar to the reference of Moro in the manner that both involve image processing to occur to image data before the image data is printed (same field of endeavor). However, the image being processed in the system of So '419 is compressed and decompressed with the following devices operating in parallel; see figs. 1 and 4; col. 3, lines 19-50).

Therefore, in view of So '419, it would have been obvious to one of ordinary skill at the time the invention was made to have a plurality of compressing/expanding devices operating in parallel in order to have both the compressing and decompressing

devices operate in parallel when processing a monochromatic image (as stated in So '419 col. 3, lines 19-50).

However, Moro '605 in view of So '419 fails to teach transfers input data-to-be output to said output portion through less than all of said plurality of compressing/expanding devices operating in parallel, and wherein said transfer controller transfers said input data-to-be-output to said output portion after said input data-to-be-output has been compressed and expanded by said compression/expanding devices operating in parallel; and transfer controller transfers said input data-to-be-output to at least some of said plurality of compressing/expanding devices.

However, this is well known in the art as evidenced by Mishima '031. Mishima '031 discloses transfers input data-to-be output to said output portion through less than all of said plurality of compressing/expanding devices operating in parallel (i.e. the system of Mishima is similar to both inventions of So and Moro in the manner in which all three systems contain multiple compression and expansion devices that operate in the image forming system (same field of endeavor). However, in the system of Mishima, compression/expander processors are set for compression and expansion. When image data is stored in and read from memory unit (13) two of the processors that operate in parallel are set for compression while the other two are set for expansion. This performs the above feature of having less than all of and at least some of the plurality of compressing/expanding devices used in the system for compression and expansion; see col. 5, lines 1-65), and

wherein said transfer controller transfers said input data-to-be-output to said output portion after said input data-to-be-output has been compressed and expanded by said compression/expanding devices operating in parallel (i.e. with two devices being used to compress data and the other two are used to expand the information, the system performs the feature of having data output to the output portion after the information has been compressed and expanded by the compression and expanding devices; see col. 5, lines 1-65) and

transfer controller transfers said input data-to-be-output to at least some of said plurality of compressing/expanding devices (i.e. in the system of Mishima, compression/expander processors are set for compression and expansion. When image data is stored in and read from memory unit (13) two of the processors that operate in parallel are set for compression while the other two are set for expansion; see col. 5, lines 1-65).

Therefore, in view of Mishima '031, it would have been obvious to one of ordinary skill at the time the invention was made to have the features that transfer input data-to-be output to said output portion through less than all of said plurality of compressing/expanding devices operating in parallel, and wherein said transfer controller transfers said input data-to-be-output to said output portion after said input data-to-be-output has been compressed and expanded by said compression/expanding devices operating in parallel; and transfer controller transfers said input data-to-be-output to at least some of said plurality of compressing/expanding devices, incorporated in the device of Moro '605, as modified by the features of So '419, in order to perform

compression and expansion according to the amount of data to be compressed and expanded (as stated in Mishima '031 col. 2, lines 20-44).

However, the inventions of Moro '605, in view of So '419 and Mishima '031 fails to teach said transfer controller transfers said input data-to-be-output to said compressing/expanding device while simultaneously transferring said input data-to-be-outputted to said output portion.

However, this is well known in the art as evidenced by Chiarabini '228. Chiarabini '228 discloses said transfer controller transfers said input data-to-be-output to said compressing/expanding device while simultaneously transferring said input data-to-be-outputted to said output portion (i.e. the system of Chiarabini is similar to the systems of Moro, So and Mishima in the manner that all the inventions involve decompressing some compressed image data for further image processing (same field of endeavor). Chiarabini is capable of having the system (100) that performs image data processing to be fully integrated into a printer device. This allows the printer to download information and decompress received compressed information. However, Chiarabini is different in the fact that it is capable of having the local interface (119) transfer information to an I/O part of the system, which contains the printing or output portion of the invention, and concurrently transferring data to the memory (116) for decompressing downloaded image data. This processing is illustrated by figure 7. With this feature incorporated in the device of Moro, as modified by the features of So and Mishima, the above feature is performed; see col. 5, ln 5-38 and col. 7, ln 48 – col. 8, ln 1-11).

Therefore, in view of Chiarabini '228, it would have been obvious to one of ordinary skill at the time the invention was made to have the feature of said transfer controller transfers said input data-to-be-output to said compressing/expanding device while simultaneously transferring said input data-to-be-outputted to said output portion incorporated in the device of Moro, as modified by the features of So and Mishima, in order to increase the number of prints that can be produced by optimizing the printing process (as stated in Chiarabini '228 col. 2, ln 28-34).

Re claim 2: The teachings of Moro in view of So '419, Mishima '031 and Chiarabini '228 are disclosed above.

Moro discloses the data processing apparatus, further comprising a compressing/expanding controller,

wherein, in cases where said input data-to-be-output is data including a small amount of information, said compressing/expanding controller assigns some of said plurality of compressing/expanding devices to compressing operation (i.e. when the data is determined to be small, or monochrome, the CPU (40) assigns the variable-length compression device to compress the image data; see fig. 6; paragraph [0035] and [0036]) and assigns some or all of the other of said plurality of compressing/expanding devices to expanding operation (i.e. after compression, the CPU (40) appoints some of the expanding, or decompression, operation to the decompression processing sections; see fig. 6; paragraphs [0035] and [0036]), and

wherein, in cases where said input data-to-be-output is data including a large amount of information, said compressing/expanding controller assigns all of said plurality of compressing/expanding devices to compressing operation at the time of compressing said input data-to-be-input (i.e. when the amount of information is determined to be large, or color, it is assigned to all of the compressing sections of fixed and variable-length compression; see fig. 6; paragraphs [0035] and [0036]) and to expanding operation at the time of expanding said compressed data-to-be-output (i.e. along with the assigning of all the compression devices, for compression, the decompression sections are also used to decompress the compressed image using all the compression devices; see fig. 6; paragraphs [0035] and [0036]).

Re claim 3: The teachings of Moro in view of So '419, Mishima '031 and Chiarabini '228 are disclosed above.

Moro discloses the data processing apparatus, further comprising an output discrimination portion which discriminates whether an outputting operation of said output portion is a first outputting operation or a second or subsequent outputting operation (i.e. with the above process, the invention does provide a method for the discrimination or determination of small or large image data to more than one set of data. The determination or discrimination process may be performed for a number of originals and when an original is done being processed, it determines that another or a second set of information, that was scanned into the system, needs to be processed; see paragraph [0057]),

wherein, in cases where said input data-to-be-output is data including a small amount of information (i.e. in the case where the image data is determined to be monochrome, it is also considered to be a small amount of information since this information is small in comparison to the color data information; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]), if it is discriminated by said output discrimination portion that said outputting operation of said output portion is a first outputting operation (i.e. since the system can repeat the method of processing documents when a document with a plurality of originals are copied at a certain time, the feature above is performed; see paragraph [0057]), said transfer controller transfers said input data-to-be-output input from said input portion to a file memory (46) through some of said plurality compressing/expanding devices (45) assigned to a compressing operation (i.e. the CPU (40) transfers the data inputted into the system to the variable-length compression device, and then it is sent to the page memory (46) for temporary storage; see fig. 6; paragraphs [0035]-[0038]) and further transfers said compressed data-to-be-output to said output portion through the other of said plurality of compressing/expanding devices assigned to the expanding operation (i.e. once the image data is compressed and stored, it is then decompressed by the decompressing device in the decompression section (45). Then after decompression, the image data is then outputted to the print section (3) for printing; see fig. 6; paragraphs [0035]-[0038]), and if it is discriminated by said output discrimination portion that an outputting operation of said output portion is a second or subsequent outputting operation (i.e. when a document has several originals that are scanned in to be processed and

outputted, the system performs the feature of determining if the current image being processed and outputted is the first, second or third set of image data being processed; see paragraph [0057]), said transfer controller transfers compressed data-to-be-output stored in said file memory to said output portion through said some or all of the other of said plurality of compressing/expanding devices assigned to expanding operation (i.e. once the image data is compressed and stored, it is then decompressed by the decompressing device in the decompression section (45). Then after decompression, the image data is then outputted to the print section (3) for printing; see fig. 6; paragraphs [0035]-[0038]), and

wherein, in cases where said input data-to-be-output is data including a large amount of information (i.e. in the case where the image data is determined to be color, it is also considered to be a large amount of information since this information is large in comparison to the monochrome data information; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]), if it is discriminated by said output discrimination portion that said outputting operation of said output portion is a first outputting operation (i.e. since the system can repeat the method of processing documents when a document with a plurality of originals are copied at a certain time, the feature above is performed; see paragraph [0057]), said transfer controller transfers said input data-to-be-output that is input from said input portion to a file memory through all of said plurality compressing/expanding devices assigned to compressing operation (i.e. when compressing color data, the CPU (40) uses all or both the fixed and variable-length compressors assigned to compressing and inputs the compressed information to the

page memory (46) through the compression devices (45); see fig. 6; paragraphs [0035]-[0038]) while transferring said input data-to-be-output to said output portion (i.e. when performing the process of compression storage and expansion on other scanned in originals, the first or previous document is sent to the printer portion to be outputted. This occurs when the processing of a document is completed and the page needs to be printed. The page is printed while another compression and expansion of a document is then performed on the next original scanned in the system; see paragraph [0057]), and if it is discriminated by said output discrimination portion that said outputting operation of said output portion is a second or subsequent outputting operation (i.e. when a document has several originals that are scanned in to be processed and outputted, the system performs the feature of determining if the current image being processed is the first, second or third set of image data being processed and outputted; see paragraph [0057]), said transfer controller transfers compressed data-to-be-output stored in said file memory to said output portion through all of said plurality of compressing/expanding devices assigned to expanding operation (i.e. the CPU (40) then assigns the decompression devices to decompress the color, or large, data through the decompression devices and eventually output the decompressed, or expanded, image data to the printing section (3); see fig. 6; paragraphs [0035]-[0038]).

However, Moro '605 in view of So '419 fails to teach transfers said input data-to-be-output to said output portion through at least some of the other of said plurality of compressing/expanding devices assigned to expanding operation.

However, this is well known in the art as evidenced by Mishima '031. Mishima '031 discloses transfers said input data-to-be-output to said output portion through at least some of the other of said plurality of compressing/expanding devices assigned to expanding operation (i.e. in the system, compression/expander processors are set for compression and expansion. When image data is stored in and read from memory unit (13) two of the processors that operate in parallel are set for compression while the other two are set for expansion. This performs the above feature of having less than all of the plurality of compressing/expanding devices used in the system; see col. 5, lines 1-65).

Therefore, in view of Mishima '031, it would have been obvious to one of ordinary skill at the time the invention was made to have the feature that transfers said input data-to-be-output to said output portion through at least some of the other of said plurality of compressing/expanding devices assigned to expanding operation in order to perform compression and expansion according to the amount of data to be compressed and expanded (as stated in Mishima '031 col. 2, lines 20-44).

However, the inventions of Moro '605, in view of So '419 and Mishima '031 fails to teach said transfer controller transfers said input data-to-be-output to said compressing/expanding device while simultaneously transferring said input data-to-be-outputted to said output portion.

However, this is well known in the art as evidenced by Chiarabini '228. Chiarabini '228 discloses said transfer controller transfers said input data-to-be-output to said compressing/expanding device while simultaneously transferring said input data-

to-be-outputted to said output portion (i.e. the system of Chiarabini is similar to the systems of Moro, So and Mishima in the manner that all the inventions involve decompressing some compressed image data for further image processing. Chiarabini is capable of having the system (100) that performs image data processing to be fully integrated into a printer device. This allows the printer to download information and decompress received compressed information. However, Chiarabini is different in the fact that it is capable of having the local interface (119) transfer information to an I/O part of the system, which contains the printing or output portion of the invention, and concurrently transferring data to the memory (116) for decompressing downloaded image data. This processing is illustrated by figure 7. With this feature incorporated in the device of Moro, as modified by the features of So and Mishima, the above feature is performed; see col. 5, ln 5-38 and col. 7, ln 48 – col. 8, ln 1-11).

Therefore, in view of Chiarabini '228, it would have been obvious to one of ordinary skill at the time the invention was made to have the feature of said transfer controller transfers said input data-to-be-output to said compressing/expanding device while simultaneously transferring said input data-to-be-outputted to said output portion incorporated in the device of Moro, as modified by the features of So and Mishima, in order to increase the number of prints that can be produced by optimizing the printing process (as stated in Chiarabini '228 col. 2, ln 28-34).

Re claim 4: The teachings of Moro in view of So '419, Mishima '031 and Chiarabini '228 are disclosed above.

Moro discloses the data processing apparatus, wherein said input data-to-be-output including a small amount of information is monochrome data (i.e. in the invention, since the frequency data determines which image data is color or monochrome based on large or small frequency readings, then the above feature is performed. The small amount of information of the monochrome data in comparison to the color data performs the feature of revealing that the small amount of information is or represents monochrome data; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]) and said input data-to-be-output including a large amount of information is color data (i.e. the information that represents large frequencies is also information that is or represents color data; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]), and wherein said data discrimination portion discriminates whether said input data-to-be-output is said monochrome data or said color data (i.e. the CPU (40) discriminates between monochrome data and color data based on the histogram charts representing large and small amounts of information; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]).

Re claim 5: The teachings of Moro in view of So '419, Mishima '031 and Chiarabini '228 are disclosed above.

Moro discloses the data processing apparatus, wherein said input data-to-be-output including a small amount of information (i.e. in the invention, since the frequency data determines which image data is color or monochrome based on large or small frequency readings, then the above feature is performed. The small amount of information of the monochrome data in comparison to the color data performs the

feature of revealing that the small amount of information is or represents monochrome data; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]) and said input data-to-be-output including a large amount of information (i.e. the information that represents large frequencies is also information that is or represents color data; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]), and wherein said data discrimination portion discriminates said input data-to-be-output (i.e. the CPU (40) discriminates between monochrome data and color data based on the histogram charts representing large and small amounts of information; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]).

However, Moro fails to teach a small amount of information is binary data, a large amount of information is multi-valued data and wherein said data discrimination portion discriminates whether said input data-to-be-output is said binary data or said multi-valued data.

However, this is well known in the art as evidenced by So '419. So '419 discloses a small amount of information is binary data (i.e. the invention includes an image that is a binary image; see col. 3, lines 1-61), a large amount of information is multi-valued data (i.e. the invention includes information that is multivalued image data; see col. 3, lines 1-61) and wherein said data discrimination portion discriminates whether said input data-to-be-output is said binary data or said multi-valued data (i.e. with So '419 having the attributes of having image data representing binary and multivalued combined with the discrimination feature in Moro, it is clear that the above feature is performed; see col. 3, lines 1-61).

Therefore, in view of So '419, it would have been obvious to one of ordinary skill at the time the invention was made to have a small amount of information is binary data, a large amount of information is multi-valued data and wherein the data discrimination portion discriminates whether the input data-to-be-output is said binary data or said multi-valued data in order to include an image that may be binary or multivalued (as stated in So '419 col. 3, lines 51-61).

Re claim 7: The teachings of Moro in view of So '419, Mishima '031 and Chiarabini '228 are disclosed above.

Moro discloses the data processing apparatus, wherein, in cases where said data-to-be-output is data including a small amount of information (i.e. in the invention, since the frequency data determines which image data is color or monochrome based on large or small frequency readings, then the above feature is performed. The small amount of information of the monochrome data in comparison to the color data performs the feature of revealing that the small amount of information is or represents monochrome data; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]), said compressing/expanding controller further changes operational assignment of said plurality of compressing/expanding devices depending on an amount of information (i.e. the CPU (40) changes the manner in which data is compressed depending on the amount of information, which represents the type of information, that the compression/decompression section (45) processes; see fig. 6; paragraphs [0035]-[0041]).

Re claim 8: Moro discloses a data processing method, comprising:

discriminating whether input data-to-be-output is data including a small amount of information or a large amount of information (i.e. the CPU (40) determines or discriminates whether inputted information is a small amount or a large amount by measuring the amount of the data using a scale of frequency. Shown in figures 7-9 are different frequency readings of color and monochrome data. The highest frequency of the color data is at least five times larger than the highest frequency of the monochrome data, which represents small information. With using this scale of frequency when increasing the density in the X-axis direction, it is seen how the color is different from the monochrome by looking at the frequency versus the increasing density on the scale. With the CPU (40) looking at these scales, it determines or discriminates a large amount of information, which is associated with the color data when judging the frequency of an image inputted into the system, and it also discriminates a small amount of information, which is associated with the monochrome data. The monochrome data is considered small in comparison to the color data when comparing how their measured frequencies of their respective density data; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]);

executing compressing operation of said input data-to-be-output and expanding operation of compressed data-to-be-output by a plurality of compressing/expanding devices operating and thereafter executing an outputting on the expanded data-to-be-output (i.e. when the data is determined to be small information, or monochrome, it is

transferred to the variable-length compression/decompression processing section. This section is able to perform both compression and storage in the page memory (46). Then, the monochrome, or small amount of information, is decompressed before being sent to the printer section (3); see paragraphs [0035], 0036] and [0042]-[0044]) in cases where it is discriminated that said input data-to-be-output is data including a small amount of information (i.e. data can be discriminated or determined to be small, or monochrome, based on the determination by the CPU (40); see paragraphs [0035], 0036] and [0042]-[0044]); and

executing the compressing operation of said input data-to-be-output while executing the outputting operation of said input data-to-be-output (i.e. when performing compression on the color data, the color data is sent through all of the compression/decompression sections since the data goes through both the fixed and variable length compression/decompression devices. When performing the process on a multiple amount of originals scanned in to the system, the first original is printed while the other originals have the process of compression and storage being performed on the respective documents. Therefore, the feature of having the data that will be outputted being sent to the compression and expansion devices while transferring other data to be outputted to the printer portion is performed by this device; see fig. 6; paragraphs [0035], [0036], [0042]-[0044] and [0057]) in cases where it is discriminated that said input data-to-be-output is data including a large amount of information (i.e. data can be discriminated or determined to be large, or color, based on the determination by the CPU (40); see paragraphs [0035], 0036] and [0042]-[0044]).

However, Moro fails to teach a plurality of compression/expansion devices operating in parallel.

However, this is well known in the art as evidenced by So '419. So '419 discloses operating in parallel (i.e. the image being processed in the system is compressed and decompressed with the following devices operating in parallel; see figs. 1 and 4; col. 3, lines 19-50).

Therefore, in view of So '419, it would have been obvious to one of ordinary skill at the time the invention was made to have a plurality of compressing/expanding devices operating in parallel in order to have both the compressing and decompressing devices operate in parallel when processing a monochromatic image (as stated in So '419 col. 3, lines 19-50).

However, Moro '605 in view of So '419 fails to teach transfers input data-to-be output to said output portion through less than all of a plurality of compressing/expanding devices operating in parallel and thereafter transferring said input data-to-be-output to an output portion.

However, this is well known in the art as evidenced by Mishima '031. Mishima '031 discloses transfers input data-to-be output to said output portion through less than all of a plurality of compressing/expanding devices operating in parallel (i.e. in the system, compression/expander processors are set for compression and expansion. When image data is stored in and read from memory unit (13) two of the processors that operate in parallel are set for compression while the other two are set for

expansion. This performs the above feature of having less than all of the plurality of compressing/expanding devices used in the system; see col. 5, lines 1-65) and

thereafter transferring said input data-to-be-output to an output portion (i.e. with two devices being used to compress data and the other two are used to expand the information, the system performs the feature of having data output to the output portion after the information has been compressed and expanded by the compression and expanding devices; see col. 5, lines 1-65).

Therefore, in view of Mishima '031, it would have been obvious to one of ordinary skill at the time the invention was made to have the feature that transfers input data-to-be output to said output portion through less than all of a plurality of compressing/expanding devices operating in parallel and thereafter transferring said input data-to-be-output to an output portion in order to perform compression and expansion according to the amount of data to be compressed and expanded (as stated in Mishima '031 col. 2, lines 20-44).

However, the inventions of Moro '605, in view of So '419 and Mishima '031 fails to teach said transfer controller transfers said input data-to-be-output to said compressing/expanding device while simultaneously transferring said input data-to-be-outputted to said output portion.

However, this is well known in the art as evidenced by Chiarabini '228. Chiarabini '228 discloses said transfer controller transfers said input data-to-be-output to said compressing/expanding device while simultaneously transferring said input data-to-be-outputted to said output portion (i.e. the system of Chiarabini is similar to the

systems of Moro, So and Mishima in the manner that all the inventions involve decompressing some compressed image data for further image processing. Chiarabini is capable of having the system (100) that performs image data processing to be fully integrated into a printer device. This allows the printer to download information and decompress received compressed information. However, Chiarabini is different in the fact that it is capable of having the local interface (119) transfer information to an I/O part of the system, which contains the printing or output portion of the invention, and concurrently transferring data to the memory (116) for decompressing downloaded image data. This processing is illustrated by figure 7. With this feature incorporated in the device of Moro, as modified by the features of So and Mishima, the above feature is performed; see col. 5, ln 5-38 and col. 7, ln 48 – col. 8, ln 1-11).

Therefore, in view of Chiarabini '228, it would have been obvious to one of ordinary skill at the time the invention was made to have the feature of said transfer controller transfers said input data-to-be-output to said compressing/expanding device while simultaneously transferring said input data-to-be-outputted to said output portion incorporated in the device of Moro, as modified by the features of So and Mishima, in order to increase the number of prints that can be produced by optimizing the printing process (as stated in Chiarabini '228 col. 2, ln 28-34).

Re claim 9: The teachings of Moro in view of So '419, Mishima '031 and Chiarabini '228 are disclosed above.

Moro discloses the data processing method as recited in claim 8,

wherein, in cases where it is discriminated that said input data-to-be-output is data including a small amount of information, some of said plurality of expanding/compressing devices are assigned to the compressing operation (i.e. when the data is determined to be small, or monochrome, the CPU (40) assigns the variable-length compression device to compress the image data; see fig. 6; paragraph [0035] and [0036]) and some or all of the other of said plurality of the expanding/compressing devices are assigned to expanding operation (i.e. after compression, the CPU (40) appoints some of the expanding, or decompression, operation to the decompression processing sections; see fig. 6; paragraphs [0035] and [0036]), and

wherein, in cases where it is discriminated that said input data-to-be-output is data including a large amount of information, all of said plurality of expanding/compressing devices are assigned to the compressing operation at the time of compressing a input data-to-be-input (i.e. when the amount of information is determined to be large, or color, it is assigned to all of the compressing sections of fixed and variable-length compression; see fig. 6; paragraphs [0035] and [0036]) and to the expanding operation at the time of expanding said compressed data-to-be-input (i.e. along with the assigning of all the compression devices, for compression, the decompression sections are also used to decompress the compressed image using all the compression devices; see fig. 6; paragraphs [0035] and [0036]).

Re claim 10: The teachings of Moro in view of So '419, Mishima '031 and Chiarabini '228 are disclosed above.

Moro discloses the data processing method as recited in claim 9,

wherein it is discriminated whether said outputting operation is a first outputting operation or a second or subsequent outputting operation (i.e. with the above process, the invention does provide a method for the discrimination or determination of small or large image data to more than one set of data. The determination or discrimination process may be performed for a number of originals and when an original is done being processed, it determines that another or a second set of information, that was scanned into the system, needs to be processed; see paragraph [0057]),

wherein, in cases where said input data-to-be-output is data including a small amount of information (i.e. in the case where the image data is determined to be monochrome, it is also considered to be a small amount of information since this information is small in comparison to the color data information; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]), if it is discriminated that said outputting operation is a first outputting operation (i.e. since the system can repeat the method of processing documents when a document with a plurality of originals are copied at a certain time, the feature above is performed; see paragraph [0057]), said inputted data-to-be-output is transferred to a file memory through some of said plurality compressing/expanding devices assigned to compressing operation (i.e. the CPU (40) transfers the data inputted into the system to the variable-length compression device, and then it is sent to the page memory (46) for temporary storage; see fig. 6; paragraphs [0035]-[0038]) and then output through some or all of the other of said plurality of compressing/expanding devices assigned to expanding operation (i.e. once the image data is compressed and

stored, it is then decompressed by the decompressing device in the decompression section (45). Then after decompression, the image data is then outputted to the print section (3) for printing; see fig. 6; paragraphs [0035]-[0038]), and if it is discriminated that said outputting operation is a second or subsequent outputting operation (i.e. when a document has several originals that are scanned in to be processed and outputted, the system performs the feature of determining if the current image being processed and outputted is the first, second or third set of image data being processed; see paragraph [0057]), said compressed data stored in said file memory (46) is outputted through said some or all of the other of said plurality of compressing/expanding devices assigned to the expanding operation (i.e. once the image data is compressed and stored, it is then decompressed by the decompressing device in the decompression section (45). Then after decompression, the image data is then outputted to the print section (3) for printing; see fig. 6; paragraphs [0035]-[0038]), and

wherein, in cases where said input data-to-be-output is data including a large amount of information (i.e. in the case where the image data is determined to be color, it is also considered to be a large amount of information since this information is large in comparison to the monochrome data information; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]), if it is discriminated that said outputting operation is a first outputting operation (i.e. since the system can repeat the method of processing documents when a document with a plurality of originals are copied at a certain time, the feature above is performed; see paragraph [0057]), input data-to-be-output is transferred to a file memory through all of said plurality compressing/expanding devices assigned to

compressing operation (i.e. when compressing color data, the CPU (40) uses all or both the fixed and variable-length compressors assigned to compressing and inputs the compressed information to the page memory (46) through the compression devices (45); see fig. 6; paragraphs [0035]-[0038]) while transferring said input data-to-be-output to an output portion (i.e. when performing the process of compression storage and expansion on other scanned in originals, the first or previous document is sent to the printer portion to be outputted. This occurs when the processing of a document is completed and the page needs to be printed. The page is printed while another compression and expansion of a document is then performed on the next original scanned in the system; see paragraph [0057]), and if it is discriminated that said outputting operation is a second or subsequent set of outputting operation (i.e. when a document has several originals that are scanned in to be processed and outputted, the system performs the feature of determining if the current image being processed is the first, second or third set of image data being processed and outputted; see paragraph [0057]), compressed data stored in said file memory is transferred to said output portion through all of said plurality of compressing/expanding devices assigned to expanding operation (i.e. the CPU (40) then assigns the decompression devices to decompress the color, or large, data through the decompression devices and eventually output the decompressed, or expanded, image data to the printing section (3); see fig. 6; paragraphs [0035]-[0038]).

However, the inventions of Moro '605, in view of So '419 and Mishima '031 fails to teach said transfer controller transfers said input data-to-be-output to said

compressing/expanding device while simultaneously transferring said input data-to-be-outputted to said output portion.

However, this is well known in the art as evidenced by Chiarabini '228. Chiarabini '228 discloses said transfer controller transfers said input data-to-be-output to said compressing/expanding device while simultaneously transferring said input data-to-be-outputted to said output portion (i.e. the system of Chiarabini is similar to the systems of Moro, So and Mishima in the manner that all the inventions involve decompressing some compressed image data for further image processing. Chiarabini is capable of having the system (100) that performs image data processing to be fully integrated into a printer device. This allows the printer to download information and decompress received compressed information. However, Chiarabini is different in the fact that it is capable of having the local interface (119) transfer information to an I/O part of the system, which contains the printing or output portion of the invention, and concurrently transferring data to the memory (116) for decompressing downloaded image data. This processing is illustrated by figure 7. With this feature incorporated in the device of Moro, as modified by the features of So and Mishima, the above feature is performed; see col. 5, ln 5-38 and col. 7, ln 48 – col. 8, ln 1-11).

Therefore, in view of Chiarabini '228, it would have been obvious to one of ordinary skill at the time the invention was made to have the feature of said transfer controller transfers said input data-to-be-output to said compressing/expanding device while simultaneously transferring said input data-to-be-outputted to said output portion incorporated in the device of Moro, as modified by the features of So and Mishima, in

order to increase the number of prints that can be produced by optimizing the printing process (as stated in Chiarabini '228 col. 2, ln 28-34).

Re claim 11: The teachings of Moro in view of So '419, Mishima '031 and Chiarabini '228 are disclosed above.

Moro discloses the data processing method, wherein said input data-to-be-output including a small amount of information is monochrome data (i.e. in the invention, since the frequency data determines which image data is color or monochrome based on large or small frequency readings, then the above feature is performed. The small amount of information of the monochrome data in comparison to the color data performs the feature of revealing that the small amount of information is or represents monochrome data; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]) and said input data-to-be-output including a large amount of information is color data (i.e. the information that represents large frequencies is also information that is or represents color data; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]), and wherein data discrimination is performed by discriminating whether input said data-to-be-output is said monochrome data or said color data (i.e. the CPU (40) discriminates between monochrome data and color data based on the histogram charts representing large and small amounts of information; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]).

Re claim 12: The teachings of Moro in view of So '419, Mishima '031 and Chiarabini '228 are disclosed above.

Moro discloses the data processing method, wherein said input data-to-be-output including a small amount of information (i.e. in the invention, since the frequency data determines which image data is color or monochrome based on large or small frequency readings, then the above feature is performed. The small amount of information of the monochrome data in comparison to the color data performs the feature of revealing that the small amount of information is or represents monochrome data; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]) and said input data-to-be-output including a large amount of information (i.e. the information that represents large frequencies is also information that is or represents color data; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]), and wherein data discrimination is performed by discriminating said input data-to-be-output (i.e. the CPU (40) discriminates between monochrome data and color data based on the histogram charts representing large and small amounts of information; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]).

However, Moro fails to teach a small amount of information is binary data, a large amount of information is multi-valued data and wherein said data discrimination portion discriminates whether said input data-to-be-output is said binary data or said multi-valued data.

However, this is well known in the art as evidenced by So '419. So '419 discloses a small amount of information is binary data (i.e. the invention includes an image that is a binary image; see col. 3, lines 1-61), a large amount of information is multi-valued data (i.e. the invention includes information that is multivalued image data;

see col. 3, lines 1-61) and wherein said data discrimination portion discriminates whether said input data-to-be-output is said binary data or said multi-valued data (i.e. with So '419 having the attributes of having image data representing binary and multivalued combined with the discrimination feature in Moro, it is clear that the above feature is performed; see col. 3, lines 1-61).

Therefore, in view of So '419, it would have been obvious to one of ordinary skill at the time the invention was made to have a small amount of information is binary data, a large amount of information is multi-valued data and wherein the data discrimination portion discriminates whether the input data-to-be-output is said binary data or said multi-valued data in order to include an image that may be binary or multivalued (as stated in So '419 col. 3, lines 51-61).

Re claim 14: The teachings of Moro in view of So '419, Mishima '031 and Chiarabini '228 are disclosed above.

Moro discloses the data processing method, wherein, in cases where said input data-to-be-output is data including a small amount of information (i.e. in the invention, since the frequency data determines which image data is color or monochrome based on large or small frequency readings, then the above feature is performed. The small amount of information of the monochrome data in comparison to the color data performs the feature of revealing that the small amount of information is or represents monochrome data; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]), operational assignment of said plurality of compressing/expanding devices is changed depending on an amount

of information (i.e. the CPU (40) changes the manner in which data is compressed depending on the amount of information, which represents the type of information, that the compression/decompression section (45) processes; see fig. 6; paragraphs [0035]-[0041]).

Re claim 15: Moro discloses an image forming apparatus, comprising:

a scanner (2) which outputs an original image by converting into electronic data with a photoelectric transferring element (i.e. the system has a scanner element (2) that scans an image and converts that into electric data using a CCD sensor; paragraph [0023]);

an input port which receives a print job from an external device including a computer and a facsimile apparatus (i.e. the external communication line can receive data from an outside source, which can include a computer or facsimile. With the printer controller (49) able to develop information into image data from a personal computer, it is clear that the overall system has a means of receiving an input from a computer; see fig. 4; paragraphs [0026] and [0027]);

an input adjusting portion which receives a scanned image job outputted from said scanner and a print job inputted into said input port (i.e. the image processing section receives an image job before it goes through the compression and decompression section and the image processing section may receive a print job from an outside facsimile source or the personal computer (50) to go to another section of

the overall system in figure 4 after image processing has occurred on the received job; see fig. 4; paragraphs [0026] and [0027]);

a plurality of compressing/expanding devices which compress input data-to-be-output included in a job inputted from said input adjusting portion and expand compressed data-to-be-output (i.e. the compression and decompression section (45) has a plurality of compressing/expanding devices which compress data to be outputted from the image processing section, which is considered the input adjusting portion, and expands data; see figs. 4 and 6; paragraphs [0026] and [0027]);

a storage which stores said compressed data-to-be-output (i.e. the compression memory is used to store compressed data that will be outputted see fig. 4; paragraph [0026]);

a printer which prints out data-to-be-output, said data-to-be-output being included in said print job or said scanned image job on a sheet (i.e. the printer (3) prints out data relating to data outputted from a computer, like a print job, or data that can be printed in relation to a scanned image job; see fig. 3; paragraphs [0026]-[0028]);

a data discrimination portion (40) which discriminates whether said input data-to-be-output is data including a small amount of information or a large amount of information (i.e. the CPU (40) determines or discriminates whether inputted information is a small amount or a large amount by measuring the amount of the data using a scale of frequency. Shown in figures 7-9 are different frequency readings of color and monochrome data. The highest frequency of the color data is at least five times larger than the highest frequency of the monochrome data, which represents small

information. With using this scale of frequency when increasing the density in the X-axis direction, it is seen how the color is different from the monochrome by looking at the frequency versus the increasing density on the scale. With the CPU (40) looking at these scales, it determines or discriminates a large amount of information, which is associated with the color data when judging the frequency of an image inputted into the system, and it also discriminates a small amount of information, which is associated with the monochrome data. The monochrome data is considered small in comparison to the color data when comparing how their measured frequencies of their respective density data; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]); and

a transfer controller (40);

wherein, in cases where it is discriminated by said data discrimination portion that said input data-to-be-output is data including a small amount of information (i.e. data can be discriminated or determined to be small, or monochrome, based on the determination by the CPU (40); see paragraphs [0035], 0036] and [0042]-[0044]), said transfer controller transfers said input data-to-be-output to said printer through said plurality of compressing/expanding devices (i.e. when the data is determined to be small information, or monochrome, it is transferred to the variable-length compression/decompression processing section. This section is able to perform both compression and storage in the page memory (46). Then, the monochrome, or small amount of information, is decompressed before being sent to the printer section (3); see paragraphs [0035], 0036] and [0042]-[0044]), and

wherein, in cases where it is discriminated by said data discrimination portion that said input data-to-be-output is data including a large amount of information (i.e. data can be discriminated or determined to be large, or color, based on the determination by the CPU (40); see paragraphs [0035], 0036] and [0042]-[0044]), said transfer controller transfers said input data-to-be-output to said plurality of compressing/expanding devices while transferring said data-to-be-output to an output portion (i.e. when performing compression on the color data, the color data is sent through all of the compression/decompression sections since the data goes through both the fixed and variable length compression/decompression devices. When performing the process on a multiple amount of originals scanned in to the system, the first original is printed while the other originals have the process of compression and storage being performed on the respective documents. Therefore, the feature of having the data that will be outputted being sent to the compression and expansion devices while transferring other data to be outputted to the printer portion is performed by this device; see fig. 6; paragraphs [0035], [0036], [0042]-[0044] and [0057]).

However, Moro fails to teach operating in parallel.

However, this is well known in the art as evidenced by So '419. So '419 discloses operating in parallel (i.e. the image being processed in the system is compressed and decompressed with the following devices operating in parallel; see figs. 1 and 4; col. 3, lines 19-50).

Therefore, in view of So '419, it would have been obvious to one of ordinary skill at the time the invention was made to have a plurality of compressing/expanding

devices operating in parallel in order to have both the compressing and decompressing devices operate in parallel when processing a monochromatic image (as stated in So '419 col. 3, lines 19-50).

However, Moro '605 in view of So '419 fails to teach transfers said input data-to-be output to said printer through less than all of said plurality of compressing/expanding devices operating in parallel, and after being compressed and expanded by said compressing/expanding devices operating in parallel, transfers said input data-to-be-output to an output portion; and transfer controller transfers said input data-to-be-output to at least some of said plurality of compressing/expanding devices.

However, this is well known in the art as evidenced by Mishima '031. Mishima '031 discloses transfers said input data-to-be output to said printer through less than all of said plurality of compressing/expanding devices operating in parallel (i.e. in the system, compression/expander processors are set for compression and expansion. When image data is stored in and read from memory unit (13) two of the processors that operate in parallel are set for compression while the other two are set for expansion. This performs the above feature of having less than all of and at least some of the plurality of compressing/expanding devices used in the system for compression and expansion; see col. 5, lines 1-65), and

after being compressed and expanded by said compressing/expanding devices operating in parallel, transfers said input data-to-be-output to an output portion (i.e. with two devices being used to compress data and the other two are used to expand the information, the system performs the feature of having data output to the output portion

after the information has been compressed and expanded by the compression and expanding devices; see col. 5, lines 1-65);

transfer controller transfers said input data-to-be-output to at least some of said plurality of compressing/expanding devices (i.e. in the system, compression/expander processors are set for compression and expansion. When image data is stored in and read from memory unit (13) two of the processors that operate in parallel are set for compression while the other two are set for expansion; see col. 5, lines 1-65).

Therefore, in view of Mishima '031, it would have been obvious to one of ordinary skill at the time the invention was made to have the feature that transfers said input data-to-be output to said printer through less than all of said plurality of compressing/expanding devices operating in parallel, and after being compressed and expanded by said compressing/expanding devices operating in parallel, transfers said input data-to-be-output to an output portion; and transfer controller transfers said input data-to-be-output to at least some of said plurality of compressing/expanding devices in order to perform compression and expansion according to the amount of data to be compressed and expanded (as stated in Mishima '031 col. 2, lines 20-44).

However, the inventions of Moro '605, in view of So '419 and Mishima '031 fails to teach said transfer controller transfers said input data-to-be-output to said compressing/expanding device while simultaneously transferring said input data-to-be-outputted to said output portion.

However, this is well known in the art as evidenced by Chiarabini '228. Chiarabini '228 discloses said transfer controller transfers said input data-to-be-output

to said compressing/expanding device while simultaneously transferring said input data-to-be-outputted to said output portion (i.e. the system of Chiarabini is similar to the systems of Moro, So and Mishima in the manner that all the inventions involve decompressing some compressed image data for further image processing. Chiarabini is capable of having the system (100) that performs image data processing to be fully integrated into a printer device. This allows the printer to download information and decompress received compressed information. However, Chiarabini is different in the fact that it is capable of having the local interface (119) transfer information to an I/O part of the system, which contains the printing or output portion of the invention, and concurrently transferring data to the memory (116) for decompressing downloaded image data. This processing is illustrated by figure 7. With this feature incorporated in the device of Moro, as modified by the features of So and Mishima, the above feature is performed; see col. 5, ln 5-38 and col. 7, ln 48 – col. 8, ln 1-11).

Therefore, in view of Chiarabini '228, it would have been obvious to one of ordinary skill at the time the invention was made to have the feature of said transfer controller transfers said input data-to-be-output to said compressing/expanding device while simultaneously transferring said input data-to-be-outputted to said output portion incorporated in the device of Moro, as modified by the features of So and Mishima, in order to increase the number of prints that can be produced by optimizing the printing process (as stated in Chiarabini '228 col. 2, ln 28-34).

Re claim 16: The teachings of Moro in view of So '419, Mishima '031 and Chiarabini '228 are disclosed above.

Moro discloses the image forming apparatus as recited in claim 15, further comprising a compressing/expanding controller,

wherein, in cases where said input data-to-be-output is data including a small amount of information, said compressing/expanding controller assigns some of said plurality of compressing/expanding devices to compressing operation (i.e. when the data is determined to be small, or monochrome, the CPU (40) assigns the variable-length compression device to compress the image data; see fig. 6; paragraph [0035] and [0036]) and assigns some or all of the other of said plurality of compressing/expanding devices to expanding operation (i.e. after compression, the CPU (40) appoints some of the expanding, or decompression, operation to the decompression processing sections; see fig. 6; paragraphs [0035] and [0036]), and

wherein, in cases where said input data-to-be-output is data including a large amount of information, said compressing/expanding controller assigns all of said plurality of compressing/expanding devices to compressing operation at a time of compressing a data-to-be-inputted (i.e. when the amount of information is determined to be large, or color, it is assigned to all of the compressing sections of fixed and variable-length compression; see fig. 6; paragraphs [0035] and [0036]) and assigns all of said plurality of compressing/expanding devices to expanding operation at the time of expanding said compressed data-to-be-output (i.e. along with the assigning of all the compression devices, for compression, the decompression sections are also used to

decompress the compressed image using all the compression devices; see fig. 6; paragraphs [0035] and [0036]).

Re claim 17: The teachings of Moro in view of So '419, Mishima '031 and Chiarabini '228 are disclosed above.

Moro discloses the image forming apparatus as recited in claim 16, further comprising an output discrimination portion which discriminates whether an outputting operation of said printer is a first outputting operation or a second or subsequent set of outputting operation (i.e. with the above process, the invention does provide a method for the discrimination or determination of small or large image data to more than one set of data. The determination or discrimination process may be performed for a number of originals and when an original is done being processed, it determines that another or a second set of information, that was scanned into the system, needs to be processed; see paragraph [0057]),

wherein, in cases where said input data-to-be-output is data including a small amount of information (i.e. in the case where the image data is determined to be monochrome, it is also considered to be a small amount of information since this information is small in comparison to the color data information; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]), if it is discriminated by said output discrimination portion that said outputting operation of said printer is a first outputting operation (i.e. since the system can repeat the method of processing documents when a document with a plurality of originals are copied at a certain time, the feature above is performed;

see paragraph [0057]), said transfer controller transfers said input data-to-be-output to said storage through some of said plurality compressing/expanding devices assigned to compressing operation (i.e. the CPU (40) transfers the data inputted into the system to the variable-length compression device, and then it is sent to the page memory (46) for temporary storage; see fig. 6; paragraphs [0035]-[0038]) and further transfers said compressed data-to-be-output to said printer through some or all of the other of said plurality of compressing/expanding devices assigned to expanding operation (i.e. once the image data is compressed and stored, it is then decompressed by the decompressing device in the decompression section (45). Then after decompression, the image data is then outputted to the print section (3) for printing; see fig. 6; paragraphs [0035]-[0038]), and if it is discriminated by said output discrimination portion that said output from said printer is a second or subsequent output (i.e. when a document has several originals that are scanned in to be processed and outputted, the system performs the feature of determining if the current image being processed and outputted is the first, second or third set of image data being processed; see paragraph [0057]), said transfer controller transfers compressed data-to-be-output stored in said storage to said printer through said some or all of the other of said plurality of compressing/expanding devices assigned to expanding operation (i.e. once the image data is compressed and stored, it is then decompressed by the decompressing device in the decompression section (45). Then after decompression, the image data is then outputted to the print section (3) for printing; see fig. 6; paragraphs [0035]-[0038]), and

wherein, in cases where said input data-to-be-output is data including a large amount of information (i.e. in the case where the image data is determined to be color, it is also considered to be a large amount of information since this information is large in comparison to the monochrome data information; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]), if it is discriminated by said output discrimination portion that said outputting operation of said printer is a first set of outputting operation (i.e. since the system can repeat the method of processing documents when a document with a plurality of originals are copied at a certain time, the feature above is performed; see paragraph [0057]), said transfer controller transfers said input data-to-be-output to said storage through all of said plurality compressing/expanding devices assigned to compressing operation (i.e. when compressing color data, the CPU (40) uses all or both the fixed and variable-length compressors assigned to compressing and inputs the compressed information to the page memory (46) through the compression devices (45); see fig. 6; paragraphs [0035]-[0038]) while transferring said input data-to-be-output to said printer (i.e. when performing the process of compression storage and expansion on other scanned in originals, the first or previous document is sent to the printer portion to be outputted. This occurs when the processing of a document is completed and the page needs to be printed. The page is printed while another compression and expansion of a document is then performed on the next original scanned in the system; see paragraph [0057]), and if it is discriminated by said output discrimination portion that said outputting operation of said printer is a second or subsequent outputting operation (i.e. when a document has several originals that are scanned in to be processed and

outputted, the system performs the feature of determining if the current image being processed is the first, second or third set of image data being processed and outputted; see paragraph [0057]), said transfer controller transfers compressed data-to-be-output stored in said storage to said printer through all of said plurality of compressing/expanding devices assigned to expanding operation (i.e. the CPU (40) then assigns the decompression devices to decompress the color, or large, data through the decompression devices and eventually output the decompressed, or expanded, image data to the printing section (3); see fig. 6; paragraphs [0035]-[0038]).

However, the inventions of Moro '605, in view of So '419 and Mishima '031 fails to teach said transfer controller transfers said input data-to-be-output to said compressing/expanding device while simultaneously transferring said input data-to-be-outputted to said output portion.

However, this is well known in the art as evidenced by Chiarabini '228. Chiarabini '228 discloses said transfer controller transfers said input data-to-be-output to said compressing/expanding device while simultaneously transferring said input data-to-be-outputted to said output portion (i.e. the system of Chiarabini is similar to the systems of Moro, So and Mishima in the manner that all the inventions involve decompressing some compressed image data for further image processing. Chiarabini is capable of having the system (100) that performs image data processing to be fully integrated into a printer device. This allows the printer to download information and decompress received compressed information. However, Chiarabini is different in the fact that it is capable of having the local interface (119) transfer information to an I/O

part of the system, which contains the printing or output portion of the invention, and concurrently transferring data to the memory (116) for decompressing downloaded image data. This processing is illustrated by figure 7. With this feature incorporated in the device of Moro, as modified by the features of So and Mishima, the above feature is performed; see col. 5, ln 5-38 and col. 7, ln 48 – col. 8, ln 1-11).

Therefore, in view of Chiarabini '228, it would have been obvious to one of ordinary skill at the time the invention was made to have the feature of said transfer controller transfers said input data-to-be-output to said compressing/expanding device while simultaneously transferring said input data-to-be-outputted to said output portion incorporated in the device of Moro, as modified by the features of So and Mishima, in order to increase the number of prints that can be produced by optimizing the printing process (as stated in Chiarabini '228 col. 2, ln 28-34).

Re claim 18: The teachings of Moro in view of So '419, Mishima '031 and Chiarabini '228 are disclosed above.

Moro discloses the data processing apparatus, wherein said input data-to-be-output including a small amount of information is monochrome data (i.e. in the invention, since the frequency data determines which image data is color or monochrome based on large or small frequency readings, then the above feature is performed. The small amount of information of the monochrome data in comparison to the color data performs the feature of revealing that the small amount of information is or represents monochrome data; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]) and said

input data-to-be-output including a large amount of information is color data (i.e. the information that represents large frequencies is also information that is or represents color data; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]), and wherein said data discrimination portion discriminates whether said input data-to-be-output is said monochrome data or said color data (i.e. the CPU (40) discriminates between monochrome data and color data based on the histogram charts representing large and small amounts of information; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]).

Re claim 19: The teachings of Moro in view of So '419, Mishima '031 and Chiarabini '228 are disclosed above.

Moro discloses the data processing apparatus, wherein said input data-to-be-output including a small amount of information (i.e. in the invention, since the frequency data determines which image data is color or monochrome based on large or small frequency readings, then the above feature is performed. The small amount of information of the monochrome data in comparison to the color data performs the feature of revealing that the small amount of information is or represents monochrome data; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]) and said input data-to-be-output including a large amount of information (i.e. the information that represents large frequencies is also information that is or represents color data; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]), and wherein said data discrimination portion discriminates said input data-to-be-output (i.e. the CPU (40) discriminates between monochrome data and color data based on the histogram charts representing

large and small amounts of information; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]).

However, Moro fails to teach a small amount of information is binary data, a large amount of information is multi-valued data and wherein said data discrimination portion discriminates whether said input data-to-be-output is said binary data or said multi-valued data.

However, this is well known in the art as evidenced by So '419. So '419 discloses a small amount of information is binary data (i.e. the invention includes an image that is a binary image; see col. 3, lines 1-61), a large amount of information is multi-valued data (i.e. the invention includes information that is multivalued image data; see col. 3, lines 1-61) and wherein said data discrimination portion discriminates whether said input data-to-be-output is said binary data or said multi-valued data (i.e. with So '419 having the attributes of having image data representing binary and multivalued combined with the discrimination feature in Moro, it is clear that the above feature is performed; see col. 3, lines 1-61).

Therefore, in view of So '419, it would have been obvious to one of ordinary skill at the time the invention was made to have a small amount of information is binary data, a large amount of information is multi-valued data and wherein the data discrimination portion discriminates whether the input data-to-be-output is said binary data or said multi-valued data in order to include an image that may be binary or multivalued (as stated in So '419 col. 3, lines 51-61).

Re claim 21: The teachings of Moro in view of So '419, Mishima '031 and Chiarabini '228 are disclosed above.

Moro discloses the data processing apparatus, wherein, in cases where said input data-to-be-output is data including a small amount of information (i.e. in the invention, since the frequency data determines which image data is color or monochrome based on large or small frequency readings, then the above feature is performed. The small amount of information of the monochrome data in comparison to the color data performs the feature of revealing that the small amount of information is or represents monochrome data; see fig. 7-9; paragraphs [0035], 0036] and [0042]-[0044]), said compressing/expanding controller further changes operational assignment of said plurality of compressing/expanding devices depending on an amount of information (i.e. the CPU (40) changes the manner in which data is compressed depending on the amount of information, which represents the type of information, that the compression/decompression section (45) processes; see fig. 6; paragraphs [0035]-[0041]).

7. Claims 6, 13 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moro, in view of So '419, Mishima '031 and Chiarabini '228, as applied to claims 1, 8 and 15 above, and further in view of Shiohara (US Pub No 2003/0122935).

Re claim 6: The teachings of Moro in view of So '419, Mishima '031 and Chiarabini '228 are disclosed above.

However, Moro '605 fails to specifically teach binary data includes binarized color data.

However, this is well known in the art as evidenced by So '419. So '419 teaches the data processing apparatus, wherein said binary data (i.e. the invention includes an image that is a binary image; see col. 3, lines 1-61).

Therefore, in view of So '419, it would have been obvious to one of ordinary skill at the time the invention was made to have information is binary data in order to include an image that may be binary or multivalued (as stated in So '419 col. 3, lines 51-61).

However, Moro in view of So '419, Mishima '031 and Chiarabini '228 fails to teach binary data includes binarized color data.

However, this is well known in the art as evidenced by Shiohara. Shiohara discloses binary data includes binarized color data (i.e. the reference of Shiohara discloses a system that compresses and decompresses images similar to the systems of Moro, So and Chiarabini (same field of endeavor). However, in the system of Shiohara, a bit map of color data is binarized in order to prepare a binary data table for each color; see paragraph [0090]-[0093]).

Therefore, in view of Shiohara, it would have been obvious to one of ordinary skill at the time the invention was made to have binary data includes binarized color data in order to color data binarized to prepare binary data (as stated in Shiohara paragraph [0091]).

Re claim 13: The teachings of Moro in view of So '419, Mishima '031 and Chiarabini '228 are disclosed above.

However, Moro '605 fails to specifically teach binary data includes binarized color data.

However, this is well known in the art as evidenced by So '419. So '419 teaches the data processing apparatus, wherein said binary data (i.e. the invention includes an image that is a binary image; see col. 3, lines 1-61).

Therefore, in view of So '419, it would have been obvious to one of ordinary skill at the time the invention was made to have information is binary data in order to include an image that may be binary or multivalued (as stated in So '419 col. 3, lines 51-61).

However, Moro in view of So '419, Mishima '031 and Chiarabini '228 fails to teach binary data includes binarized color data.

However, this is well known in the art as evidenced by Shiohara. Shiohara discloses binary data includes binarized color data (i.e. the reference of Shiohara discloses a system that compresses and decompresses images similar to the systems of Moro, So and Chiarabini (same field of endeavor). However, in the system of Shiohara, a bit map of color data is binarized in order to prepare a binary data table; see paragraph [0090]-[0093]).

Therefore, in view of Shiohara, it would have been obvious to one of ordinary skill at the time the invention was made to have binary data includes binarized color data in order to color data binarized to prepare binary data (as stated in Shiohara paragraph [0091]).

Re claim 20: The teachings of Moro in view of So '419, Mishima '031 and Chiarabini '228 are disclosed above.

However, Moro '605 fails to specifically teach binary data includes binarized color data.

However, this is well known in the art as evidenced by So '419. So '419 teaches the data processing apparatus, wherein said binary data (i.e. the invention includes an image that is a binary image; see col. 3, lines 1-61).

Therefore, in view of So '419, it would have been obvious to one of ordinary skill at the time the invention was made to have information is binary data in order to include an image that may be binary or multivalued (as stated in So '419 col. 3, lines 51-61).

However, Moro in view of So '419, Mishima '031 and Chiarabini '228 fails to teach binary data includes binarized color data.

However, this is well known in the art as evidenced by Shiohara. Shiohara discloses binary data includes binarized color data (i.e. the reference of Shiohara discloses a system that compresses and decompresses images similar to the systems of Moro, So and Chiarabini (same field of endeavor). However, in the system of Shiohara, a bit map of color data is binarized in order to prepare a binary data table; see paragraph [0090]-[0093]).

Therefore, in view of Shiohara, it would have been obvious to one of ordinary skill at the time the invention was made to have binary data includes binarized color data in

order to color data binarized to prepare binary data (as stated in Shiohara paragraph [0091]).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

9. Tsuboi (USP 5317416) discloses a facsimile apparatus with a page printer having reduced memory capacity requirements. The system involves reading image data through the scanner and compressing image data while concurrently recording an image at the printing portion of the image forming apparatus (see col. 9, ln 11-47).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Twyler Haskins can be reached on (571) 272-7406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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